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COMMUNICATIONS

CATARACT EXTRACTION IN REFRACTORY PATIENTS AND THE OPERATIVE TREATMENT OF IRIDO-DIALYSIS

BY

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CAERNARVON

WHEN in practice one tends to settle down to cut-and-dried lines in the performance of various ophthalmic operations, it is sometimes a relief and affords some pleasure to be forced to try something slightly different, and possibly not quite orthodox. There is a natural reluctance to depart from well-proved procedures, but when one does and gets good results, the effect is very stimulating.

Some months ago I had a patient—a farm labourer of about sixty-eight years with a double cataract, on whom I had performed a preliminary iridectomy. It was quite useless to expect him to stay in bed—all his life he had got up at five in the morning and persisted in doing so even in Hospital. When he arrived in for the actual extraction, I was frankly puzzled to know what to do to make things as safe as possible. In the end I decided that if the incision could be kept as small as possible the risk of his daily five o'clock leap out of bed might be faced with more equanimity. To effect this, the capsule was torn and the lens thoroughly stirred

up with a Ziegler knife, and the eye was then left alone for about a week or ten days, by which time the lens matter had thoroughly "fluffed up." A keratome incision was then made above, and most of the lens matter washed out. It was found that the nucleus had some difficulty in passing through the small keratome incision, and this was widened very slightly by a snip of the scissors on either side. With a little patience and gentle pressure below and above the wound, the nucleus was coaxed through, and a final irrigation left a clear pupil.

As the wound showed no tendency to gape, the patient—after the usual atropine and argyrol, and with only the operated eye bandaged—walked back to the ward, and continued to be an ambulant case until he went out eight days later with a good result.

I was so struck with the post-operative lack of anxiety that I have since tried it on six other cases with good results, modifying the procedure by breaking up the lens first and then proceeding later to do the iridectomy and extraction through the keratome incision. The method is not so clear cut as the straight-forward extraction, and perhaps a little more patience is required in getting the nucleus through—I think it might be possible in some cases even to break up the nucleus with forceps, thus keeping the size of the incision to the very minimum—but the sight of a firmly shut little wound, and not the lax gaping of the full size cataract extraction, is very comforting, and the nursing is infinitely more pleasant from the patient's point of view, as he need not stay in bed at all. In my last case I managed to break up the nucleus itself with a Ziegler knife into five pieces, which were delivered through a very small incision.

Whilst on the subject of slightly out-of-the way operative methods, the question of treatment of iridodialysis may be worth mentioning. Some time ago I was faced with an iridodialysis in a boy aged sixteen years, in which the iris was torn away at its root for over half its circumference. There was no wound of the globe and the eye settled down cleanly and quietly, but the iridodialysis made a very obvious disfigurement. I had never seen any treatment for this condition and the text books I had did not throw any light on how to deal with it. I decided that it would be worth trying to do something.

A very narrow keratome was inserted about a millimetre and a half behind the corneosclera and pushed in obliquely until its point just appeared in the anterior chamber. The incision was as "flat" as possible, *i.e.*, similar to the incision for an iridencleisis. A very fine iris forceps was then gently pushed in and the root of the iris seized. This was then gently drawn into the wound, which was pressed by the tip of the handle of the keratome, and

the forceps released. Forty-eight hours later the eye was clean and quiet, and the portion of the iris root in the wound was still firmly held there. At the end of another few days, the same procedure was carried out further along the iris root, and again the portion remained firmly fixed. This was repeated a third time and was again successful, the eventual result being that the whole of the iris root was replaced by these three small operations, and has remained so ever since. The eye showed no reaction and the disfigurement was entirely done away with.

One small point which would not be overlooked in future was in the case of the first operation, where, being very anxious to make sure that the iris root remained in position, it was pulled out a little too far and formed a small filtering cicatrix, and the small iris protrusion had to be cauterized two or three times to flatten it out. It was found with the other two wounds that it was only necessary just to draw the iris root into the inner lips of the wound.

In an American book on ophthalmic surgery, which came into my hands after this, I looked up the treatment of iridodialysis, and was slightly abashed to find that what I thought was a new procedure had in reality been described by Wheeler of New York. It can certainly be advocated as a most simple method for dealing with the disfigurement and visual impairment due to an iridodialysis.

P.S.—Apparently after a week or more of soaking in aqueous, the cortex comes away fairly easily and—especially after irrigation —the nucleus can be made out quite distinctly. With this in mind it might be possible not only to crush it up in forceps, but possibly actually to cut it in two or three parts with a pair of fine scissors. Furthermore, with an iridectomy, which is only just a little smaller than the incision, prolapse is practically impossible. How much value there may be in the whole procedure is difficult to assess, but it may have its place in certain circumstances, or might even lead to further developments in more skilful hands than my own.

Much to my surprise the replacement of the iridodialysis is remarkably easy, as there does not seem to be any tendency for the root of the iris to pull away from the wound after replacement, which is what I thought would be the main difficulty.

VITAMIN "B" COMPLEX DEFICIENCY AS A CAUSE OF RETROBULBAR NEURITIS AND PERIPHERAL NEURITIS IN A CHRONIC ALCOHOLIC AND PIPE SMOKER

BY

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Case history.—" A.B.", aged 46 years, publican, was admitted to Highgate Hospital on September 18, 1940, complaining of dimness of vision and of pins and needles sensations in his feet and hands.

Past history.—(1) He was discharged from the Navy in 1918 for " hyperthyroidism." His symptoms of tremors and excessive sweating completely subsided in two years. (2) Slight winter cough since 1920. (3) In 1930 he was treated for "lead poisoning" from which he made a complete recovery. The symptoms were confined to the abdomen.

Present history.—During the past six years he had symptoms of morning nausea and anorexia which had been getting progressively worse. He also vomited at times. The morning anorexia was so marked that for several months he was unable to eat any breakfast. A typical day's diet during the past few months was as follows. Breakfast: Nil. Dinner: Stewed rabbit or steak and boiled potatoes. Only very occasionally some boiled cabbage or beans. Tea: White bread and butter or margarine, tea and cakes. Supper: Fried fish, *e.g.*, haddock or plaice, white bread and butter and tea. His daily diet did not include wholemeal bread, raw vegetables, pork or liver. One month ago on awakening one morning he found that the vision of both eyes was blurred. This gradually became worse. At the same time he noticed numbness and tingling in the finger tips of both hands. This has persisted since. One week ago numbness and tingling developed in the toes of both feet and gradually crept up to the level of his knees, so that on admission he complained that his gait was unsteady.

Habits.—(1) For thirty years he had been drinking heavily. At first, beer only, but during the past ten years he had been taking about 1 pint of whisky daily and since the beginning of the present war he had exceeded that amount. (2) For the last thirty years he had been smoking about 2 oz. of shag weekly but since the present war this had been increased to $3\frac{1}{2}$-4 oz.

On examination, September 18, 1940, he was found to be well

built and well nourished. There was no evidence of hyperthyroidism. The tongue was moist and furred. There were diffuse sonorous rhonchi in both lungs and early clubbing of the fingernails. The blood pressure was 175/115 but no clinical enlargement of the heart was noticed. No evidence of arterio-sclerosis was found.

Central Nervous System.—His mental state was normal. Visual acuity of right eye: unable to count fingers at a distance beyond two feet. Visual acuity of left eye: unable to count fingers at a distance beyond one foot. The fundi were normal. Visual fields: obvious bilateral central scotomata were present. There was no nystagmus. Upper limbs: no objective lesion was found. Lower limbs: pin prick sensation was impaired below the level of the knees, with maximum impairment over feet. There was no obvious muscular wasting. Both calves were tender on compression. The right ankle jerk was greater than the left. The plantars were flexor and the other reflexes were also all normal. The joint sense in his big toes was not obviously impaired but Romberg test was positive.

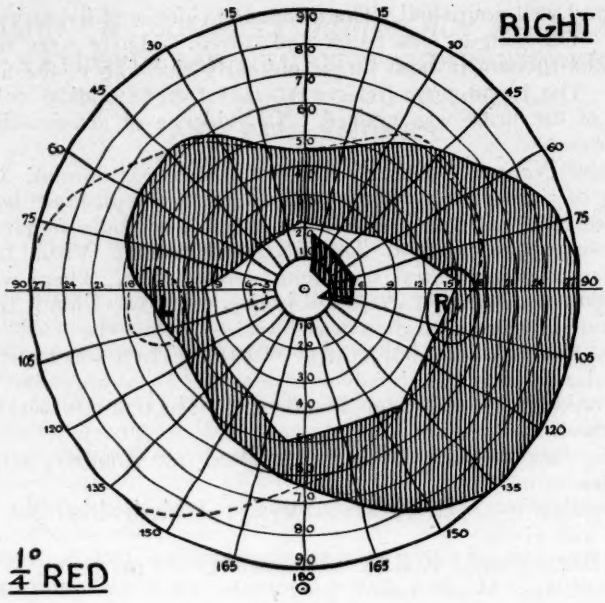
Investigations.—(1) Gastric analysis: Achlorhydria. No histamine was given.

(2) Blood count: R.B.C. 5,440,000; Hb. 98 per cent.; W.B.C. 9,400; Polys. 45 per cent.; Eos. 2 per cent.; Lymphos. 47 per cent.; Monos. 6 per cent.

(3) Blood Wassermann test: negative.

Treatment and progress.—During his one week's stay in hospital he remained in bed and was given a full mixed diet—1 oz. Bemax t.d.s. by mouth and 2 mgm. vitamin B_1 was given intramuscularly daily. He discharged himself after one week as he then felt sufficiently well to return to work. He was advised to give up alcohol completely but was allowed to smoke as before; also to continue with the mixed diet and to replace white bread by wholemeal bread. He continued to take Bemax t.d.s. and 2 mgm. vitamin B_1 intramuscularly daily until October 22, 1940, five weeks after his admission. He then felt much better and his appetite was much improved, and now the vision of his right eye was 6/9 part and that of the left 6/36 part. He was only able to see the left half of the letters of Snellen's lines with his left eye. His gait was normal and Romberg test was negative, but he still complained of coldness and numbness of both feet. His hands were now free from symptoms. The intramuscular injections were now stopped and he was advised to take 1½ oz. Bemax t.d.s. On November 13, 1940, eight weeks after admission, R.V. was 6/6 and L.V. was 6/18 part.

He then went on holiday for two weeks and was told to discontinue tobacco in addition to alcohol in order to see if the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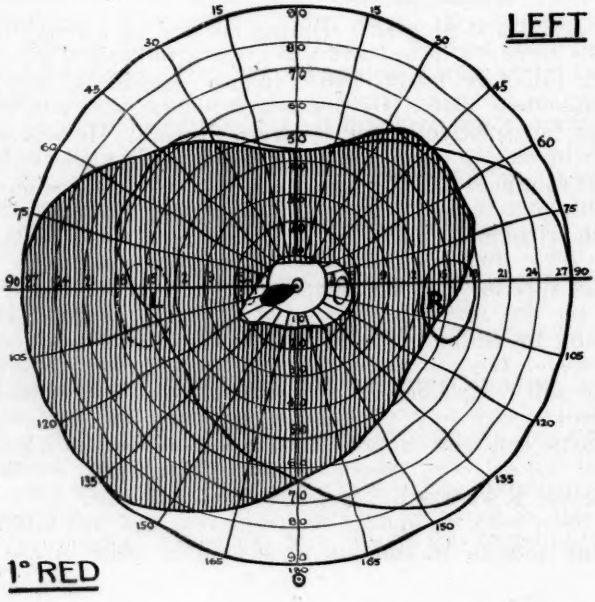
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improvement would be expedited. Perimetric charts taken on November 13, 1940, were as shown:

Mr. G. G. Penman, the visiting ophthalmologist, reported on the perimetric charts as follows: "Right field approximately normal peripherally. To ¼° red object shows scotoma extending from blind spot above disc between 10° and 20° circle, resembling 'Seidel' scotoma. Left field to 1° red object much constricted. Small scotoma between fixation point and 10° circle, in direction of blind spot."

On December 3, 1940, eleven weeks after admission, R.V. was 6/6, L.V. was 6/9 part. There was a left scotoma still present. The temporal half of the left optic disc was pale. He still complained of slight coldness of the calves and feet and there was some patchy impairment of the pin prick sensation over both calves. Right ankle jerk was still greater than the left. He had no pins and needles sensation in the fingers. The gait was normal. When next seen on January 6, 1941, he admitted that he had taken both alcohol and tobacco in a moderate amount for the past two weeks and that his vision had become blurred during the week. R.V. was 6/9, L.V. 6/12 part. He promised to abstain from alcohol in the future and to make this easier he was allowed to smoke. On January 28, 1941, R.V. was 6/6 part, L.V. was 6/9 part, left scotoma was still present, although less marked. The temporal part of the left disc was now definitely pale. Blood pressure was 165/105. When last seen on June 26, 1941, about nine months after his admission, he was feeling well and his appetite was normal. He stated that he was having a mixed diet including eggs, green vegetables and some wholemeal bread but had discontinued Bemax three months previously. He was taking an occasional beer but no whisky and was smoking as before. He had no symptoms or signs of peripheral neuritis. R.V. was 6/6, L.V. was 6/7·5. There was a central scotoma for red in the left visual field, while the temporal half of the left optic disc was pale. The B.P. was 175/115.

Comment

In the case described above, the symptoms and signs of retrobulbar and peripheral neuritis, which had been getting progressively worse, improved despite the continuation of tobacco. It would therefore appear that in this case tobacco was of little or no importance in the aetiology.

Following suggestions by Shattuck[1] and Minot[2], Wechsler[3] showed that hypovitaminosis was concerned in the aetiology of alcoholic polyneuritis. Strauss[4] further showed that nutritional deficiency rather than the toxic effects of alcohol were concerned in the causation. He allowed ten cases to take large doses of

alcohol with a full diet plus yeast, wheat germ by mouth, and vitamin B_1 and liver intramuscularly. Improvement occurred in every instance. Jolliffe *et al.*[5] analysed the diet of 42 alcoholic addicts of whom 26 had polyneuritis, and they found that:

(*a*) Every alcoholic addict with polyneuritis had an inadequate vitamin B_1 diet as estimated by Cowgill's formula[6].

(*b*) A chronic alcoholic with adequate vitamin B_1 intake did not have polyneuritis.

They thus concluded that vitamin B deficiency rather than the toxic effects of alcoholism caused the polyneuritis and therefore it is identical with dry beri-beri.

As regards retrobulbar neuritis, this is generally recognised to be due to both tobacco and alcohol. Traquair[7], however, states that in Britain tobacco is the only factor concerned in the aetiology and that alcohol merely depresses the health. Duke-Elder[8] quotes a Ministry of Health committee report of 1922 which was unable to find a single instance of retrobulbar neuritis due to alcoholism alone. Duke-Elder and Lindsay Rea both state that it does occur in heavy drinkers, especially on the continent of Europe and the former states that it is often associated with peripheral neuritis.

Retrobulbar neuritis has been described in association with other signs of vitamin B complex deficiency. Thus Calhoun[9] in 1918 described ten cases of pellagra in U.S.A. associated with retrobulbar neuritis. They had central or paracentral scotomata especially for red and green, and contraction of the visual fields. Some of the patients had optic atrophy. In a review of the literature he quoted several authors, including an Italian, Calderini, 1847, who stated that amongst cases of pellagra, 48 per cent. men and 72 per cent. women complained of disturbances of vision such as amblyopia or diplopia. Myashita[10] in Elliot's Textbook of Tropical Ophthalmology, 1920, quotes several Japanese authors since 1895, who described retrobulbar neuritis associated with beri-beri. They had central or centro-caecal scotomata, especially for green. Visual acuity was never less than 6/60. Atrophy of the temporal half of the optic disc was noted and sometimes complete atrophy. The symptoms usually appeared about three months after the onset of beri-beri and improvement followed the discontinuation of rice and administration of Japanese beans. In post-mortem examinations he found limited optic atrophy in the temporal half of the disc. Fernando[11], 1923, also described beri-beri associated with amblyopia in the Phillipine Islands, especially in parturient women. He stated that the vision was not much impaired and the visual acuity was 20/30. He found a low grade neuroretinitis with hyperaemic discs and blurred edges. The visual fields were contracted for green. Scott[12] in 1918 described an outbreak in Jamaica, confined to workers on a sugar

cane plantation whose diet consisted solely of sugar cane. They developed conjunctivitis, stomatitis and later either diarrhoea or nervous lesions, with residual dimness of vision, deafness and high steppage gait. The visual fields were normal. The outbreak terminated with the cessation of their work on the plantation. The optic nerves were found to be degenerated on post-mortem examination. He considered the conjunctivitis to be due to the irritating effect of the small hairs on the cane tops, and the other symptoms to be due to intoxication. But, in view of the diet, which consisted of carbohydrates only, *i.e.*, sugar cane, vitamin B deficiency was likely to have been the cause, particularly as it is now known that vitamin B_1 is concerned in carbohydrate metabolism and that the vitamin B_1 requirements are directly proportional to the amount of carbohydrate metabolised.[13] Moore[14], in Nigeria in 1932, described 70 cases of retrobulbar neuritis with loss of central vision in association wth sore mouth, tongue and vulva. They occurred in adolescents at school whose diet consisted of manioc (native carbohydrate food). The skin and mucous membrane lesions usually occurred before the retrobulbar neuritis. He found pallor of the temporal half of the optic disc or complete optic atrophy in advanced cases. Improvement occurred in the earlier cases following administration of marmite, cod liver oil and iron. The same author, in 1937[15], described this lesion in association with symptoms of peripheral neuritis in some of the cases. Improvement followed the administration of marmite or yeast. He concluded that these cases of retrobulbar neuritis were nutritional in origin and improvement was to be expected following treatment with vitamin B. Landor and Pallister[16], in 1935, described a similar condition in Malaya, occurring in institutions. Improvement followed the administration of yeast or marmite. Garcia Jimenéz[17], in 1940, described retrobulbar neuritis and symptoms of peripheral neuritis, in addition to glossitis and pellagra, among the civil population of Madrid during the Civil War. Their diet was inadequate in all requirements. Improvement followed the administration of brewer's yeast and he suggested that deficiency of the B_2 complex was the cause. Marchesini and Pagagno[18] showed degeneration of the optic nerves in pigeons fed on vitamin B_1 free diet. The degeneration was mainly of the papillo-macular bundle and they considered the lesion to be similar to that found in human beri-beri.

Retrobulbar neuritis has been described in association with alcoholic pellagra and beri-beri. Thus Cronin[19], in 1933, described a case of alcoholic pellagra, psychosis, polyneuritis and retrobulbar neuritis. This patient had a large blind spot in the right eye and pallor in the temporal half of the right disc. Improvement followed yeast therapy. Levine[20] in 1934 described a case of

alcoholic dermatitis and stomatitis which developed optic neuritis with congestion and exudates in the fundi. He found bilateral scotomata. This patient was a cigarette smoker. Improvement followed administration of Bemax, although he did not completely abstain from alcohol. Fine and Lachman[21] in 1937 described three cases of alcoholic dermatitis, peripheral neuritis and retrobulbar neuritis. They found central scotomata. Improvement followed the administration of yeast, liver, iron and parenteral liver. They suggested that vitamin G was the factor concerned in the aetiology. These patients were all cigarette smokers. Carrol[22] in 1936 described ten cases of alcoholic amblyopia, pellagra and polyneuritis. These patients were moderate smokers, mainly of cigarettes. The same author[23] in 1937 showed that diet was concerned in tobacco-alcohol amblyopia by admitting into hospital eight cases of amblyopia who were permitted to take both alcohol and tobacco but were given a full mixed diet with the addition of liver, cod liver oil, wheat germ and brewer's yeast. Improvement occurred in seven out of the eight cases. The unimproved case was an advanced one. He concluded that subnutrition, especially of vitamin B, increased the susceptibility to the toxic effects of tobacco and alcohol. Johnson[24] showed that vitamin B_1 was of value in the treatment of tobacco-alcohol amblyopia. Campbell and Ritchie Russel[25] in a clinical report of twenty-one cases of Wernicke's encephalopathy, due to various causes, including chronic alcoholism, mentioned that three cases had impaired vision. One of these had a central scotoma and papilloedema. Two had focal degenerative lesions in the optic nerves on post-mortem examination. In discussing aetiology and treatment they suggested that nicotinic acid and vitamin B_1 were concerned.

That nutritional deficiency is concerned in the aetiology of some cases of retrobulbar neuritis is made suggestive by its occurrence in pregnancy. Thus Kagan[26] described this lesion in a patient in three consecutive pregnancies. Central scotomata were noted. Interruption of pregnancy resulted in recovery of her sight. Lindsay Rea[27] described a case of bilateral retrobulbar neuritis which developed suddenly in the eighth month of pregnancy. Improvement of vision followed confinement, although two years later the visual acuity was still 6/60 in each eye. No details of the diet of these patients are available but as it is known that the vitamin B_1 requirements are increased in pregnancy, it is likely that they may have been suffering from conditioned vitamin B_1 deficiency. Ballantyne[28] recently, in a description of the ocular complications of hyperemesis gravidarum, showed that retrobulbar neuritis with central scotomata was the earliest eye lesion in this condition. He recommended treatment with vitamin B_1 and

possibly vitamin C. It would appear that this condition may be regarded as a conditioned deficiency of vitamin B_1 due to the vomiting, plus the increased requirements during pregnancy.

Retrobulbar neuritis has also been described in association with diabetes. Thus, O'Donaghue[29] described three cases in smokers. Recovery occurred although smoking was continued. No details of the diet are available but it would appear that some of these cases may have had a nutritional deficiency basis, due possibly to the low diets.

Conclusion

It is thus seen that bilateral retrobulbar neuritis (amblyopia) has been described in association with other evidences of vitamin B complex deficiencies. The deficiency may be actual as in beriberi or pellagra, or, it may be a conditioned deficiency, as in chronic alcoholism with its associated achlorhydria, anorexia and vomiting, or pregnancy, especially hyperemesis gravidarum. It is likely that further research will show that amblyopia may occur as a result of other conditioned deficiencies such as persistent vomiting due to any cause or other gastro-intestinal disturbances which may interfere with the proper utilisation of the vitamin. Some cases of amblyopia in association with diabetes may also be found to be due to nutritional deficiency on investigating the diet.

In the case described above, there was actual vitamin B_1 deficiency in the diet, and achlorhydria due to the chronic alcoholism. Jolliffe *et al.*[5] suggested that in order to prevent peripheral neuritis in a chronic alcoholic, in addition to a full diet, fifty Sherman units of vitamin B_1 are required for each ounce of whisky or hundred calories of alcohol up to sixteen hundred calories, which is the maximum amount that can be utilised by the body. Here about 1·33 mgms. of vitamin B_1 will have been required for the utilisation of the alcohol alone. It can therefore be concluded that his symptoms of peripheral and retrobulbar neuritis were probably due to vitamin B_1 deficiency.

Summary

(1) A case of retrobulbar neuritis and peripheral neuritis is described in a chronic alcoholic and pipe smoker.

(2) Tobacco was of little or no importance in the aetiology.

(3) The literature is reviewed describing retrobulbar neuritis as occurring in association with other evidences of vitamin B complex deficiency.

(4) Alcoholic retrobulbar neuritis is considered to be due to vitamin B complex deficiency, probably vitamin B_1.

(5) Retrobulbar neuritis in pregnancy and some cases of retrobulbar neuritis in diabetes are probably due to vitamin B_1 deficiency.

(6) Vitamin B complex deficiency, probably vitamin B_1, was the cause of the retrobulbar neuritis and peripheral neuritis in the case described.

(7) It is suggested that all cases of bilateral retrobulbar neuritis should be investigated as regards the vitamin B content in the diet, particularly if associated with evidences of pellagra, beri-beri or peripheral neuritis and treated accordingly.

I wish to express my thanks to Mr. G. G. Penman for the report on the perimetric charts and his encouragement, to Mr. R. Lindsay Rea and Dr. J. M. Alston for reading the paper and their helpful criticism, to Dr. J. H. Duke, acting medical superintendent, Highgate Hospital, and to Dr. Allen Daley, Medical Officer of Health, L.C.C., for their permission to publish this case.

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MONOCULAR DIPLOPIA OCCURRING IN CASES OF SQUINT

BY

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MONOCULAR diplopia which is sometimes complained of and at other times can be evoked artificially, is found in cases of squint which have no physical defect in the lenses, corneae, pupils, retina etc., to account for this phenomenon, but have some abnormal retinal correspondence. As early as 1854, von Graefe had remarked upon the anomalous diplopia which occurred after cases of operation for squint, and that in some cases the diplopia would change from moment to moment, being at times crossed and at others uncrossed. This change in the diplopia was due to the fact that in these cases which have both an abnormal and a normal correspondence, each retinal point has two space values according to whether the abnormal correspondence or the normal correspondence is being used. But it was Javal, who, due to the bringing to consciousness of the two space values simultaneously, actually noted a further stage of this phenomenon and described the first case of monocular diplopia occurring in a squinting child. His case, which he examined in 1864, was that of an alternating squint which dated from birth and had some weakness of the left external rectus. On examining the patient's binocular vision by means of a stereoscope, Javal found that he had monocular diplopia with the left eye, and concluded that the patient saw " one image in correct projection and the other image in false projection." Unfortunately, this case, as many cases of squint do, disappeared after six weeks, and when Javal wrote to find out what had happened, the patient replied that von Graefe had operated upon him and that he was now suffering from a crossed binocular diplopia. Javal, in his book on squint, quotes a few further cases of this monocular diplopia, usually associated with poor visual acuity in the squinting eye.

Classen, in 1870, noted the second example and described the case of a patient aged 28 years, who had diplopia following an operation for a right convergent squint associated with amblyopia and noted that at times the diplopia was crossed and at others uncrossed. After operation, on covering the left eye and fixing with the right eye and then uncovering the left eye quickly, the patient saw three images of the light, a central clear one seen by the left eye and two faint images seen by the right eye, one on the left and one on the right of the clear image. The author, however, simply says

that this phenomenon can be ignored and he concerns himself solely with the binocular diplopia which was at times crossed and at others uncrossed.

Gaudenzi, in 1897, showed that in cases of squint with a false correspondence the central impression of the eye could be projected to two different positions in space without any movement of the eyes having taken place, that is to say, each retinal point had two space values, a congenital and an acquired, and he says in certain cases these two space values can be brought to consciousness at the same time, and this is the explanation of monocular diplopia.

Tschermak, in 1899, in his auto-observations, discovered that if he fixed with one eye and then covered this same eye but still maintained the eye in the position of fixation, he could get monocular diplopia with the squinting eye. The position of the double images corresponded to the position of both foveal after images.

Bielschowsky examined with great care and much detail a case of monocular diplopia which differed somewhat from the previously recorded cases. His case was a man aged 18, a left convergent strabismus with a very amblyopic squinting eye (*i.e.*, counting fingers at six metres), who lost his good eye and after this suffered from a very troublesome monocular diplopia. This case also had eccentric fixation, but during the course of time, he learnt to fix with the macula, although at the beginning when he tried to fix with the macula he thought he was looking to the left of the object fixated and not at it. His vision improved to 6/36 and in the following year it improved to 6/18 and during that period a change took place in the appearance of the two images. At first the patient called the left image the false image and this image was dimmer, but when he learned to fix with his macula the left image was clearer and the right was fainter. This case, as I will explain later, is more complicated than most cases of monocular diplopia because not only did it have two space values for each retinal point, but there were two starting points for orientation and at times the eccentric point was used and at other times the macula. Also the muscle sense was at fault and the patient did not know the position of his eye, for, as I have previously said, when he was learning to fix with his macula he thought he was really looking to the left of the object fixated.

Travers has reported four cases of monocular diplopia which he obtained whilst stimulating macular binocular vision in cases of squint with false correspondences. Most of the recent work on this subject has been done by the oculists in the Argentine, Malbràn, Adrogue, Lagos and Sverdlick.

Malbràn and Adrogue in a paper written in 1938 and again in their book on " Squint " published in 1938, describe four cases of monocular diplopia. Three were demonstrated by means of

the synoptophore and the fourth by means of the synoptophore and by Tschermak's apparatus for testing retinal congruity. Lagos and Adrogue in 1938, examining a case of very persistent post-operative diplopia in a case of squint, by utilizing the method that Tschermak used in his auto-observations, described another case of monocular diplopia. In October 1938, Sverdlick in a very detailed paper dealing with sensorial retinal correspondence and its examination by means of " after-images " deals in much detail with the subject of monocular diplopia. Malbràn and Adrogue differ completely in their explanations of monocular diplopia from the older authors as, unlike Bielschowsky, Gaudenzi etc., who considered that monocular diplopia was due to the fact that *one* retinal point was mentally projected to two different positions in space simultaneously, they considered that the image of the eccentric point, which was at times in correspondence with the macula of the other eye, was brought to consciousness simultaneously with the macular image.

It is some years since I met my first case of monocular diplopia. It was discovered by chance and not by design. I had previously observed that in cases where it was very difficult to stimulate macular correspondence by flicker, etc., it was possible to bring to consciousness the congenital space value of the eccentric point which was used for correspondence with the macula of the other eye.

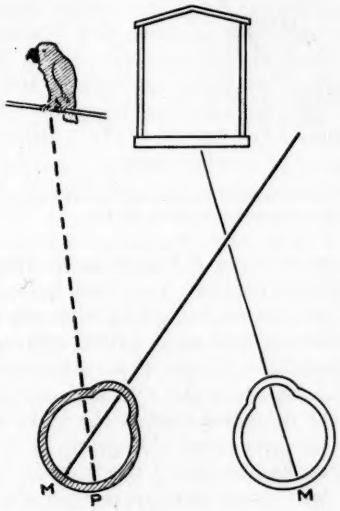

DIAGRAM 1.

Congenital space value of P is brought to consciousness.

If we look at the above diagram, the bird is in front of the left squinting eye and the cage is in front of the right fixing eye and if the angle of the squinting eye is say 25° and the angle of the tubes of the synoptophore is at 20° so that the image of the bird falls not upon the macula of the left eye, but upon the eccentric point P., the congenital space value of the eccentric point P. is as in Diagram 1, but if the case has a false correspondence 5° from the macula the acquired space value of this eccentric point P. corresponds to the space value of the macula of the other eye

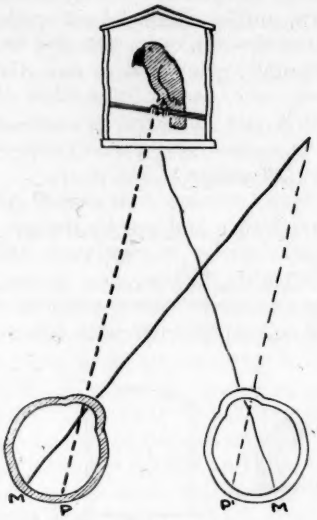

DIAGRAM 2.

Acquired correspondence is being used and the image of point P is projected to the same point in space as M.

and the bird is then seen in the cage as in Diagram 2. It must of course follow that if point P. has an acquired space value that all the other retinal points including the macula have also an acquired space value and that an acquired correspondence is being used. Thus, the macular image of this left eye will correspond with the point P.1 in the right eye and will be projected to a point in space in the temporal field of the right eye as in Diagram 3. I have found in such cases (Diagram 2) that by stimulating point P. by repeated fluctuation of the light in front of the squinting eye the bird will move and appear on the left of the cage. At first it may be quite close to the cage, but if the tubes are converged a little more, then the bird may again move into the

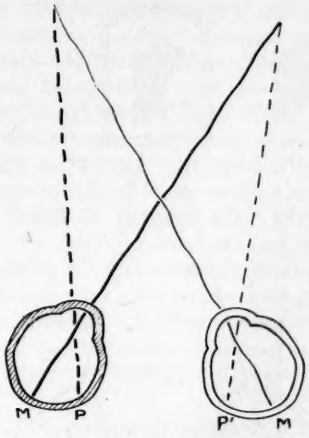

DIAGRAM 3.

Macular images are projected to different points in space when acquired correspondence is used.

cage, but at an angle which is still a little less than the true angle of the squint, *i.e.*, the patient is now using another eccentric point to correspond with the macula of the other eye but this point is nearer to the macula of the squinting eye than the previous point. Finally by repeating this process, macular correspondence can be obtained, and when this happens, it then follows that every retinal point is now using its congenital space value. My first case of monocular diplopia occurred in a child with very poor vision in the squinting eye. I tried to stimulate the macula by means of flicker to teach him to fix and he suddenly told me that he could see two images with this eye. Unfortunately, I could not study this case in detail. He was very young and not very intelligent. It was with my fourth case that I was able to study this condition. This was a case of alternating strabismus dating from the first year of life with no macular correspondence and it resisted all our efforts to elicit normal correspondence by stimulating the macula. He had an abnormal indefinite correspondence some distance from the macula and I tried stimulating the abnormal correspondence as I have previously described. I made him fix with the right eye and stimulated the abnormal corresponding point in the left eye by means of fluctuation of the light and he suddenly saw one parrot inside the cage, with another dim, vague parrot on the left of the cage. On prolonged stimulation, the parrot inside the cage disappeared and only the parrot on the left remained. In the manner previously described, I finally

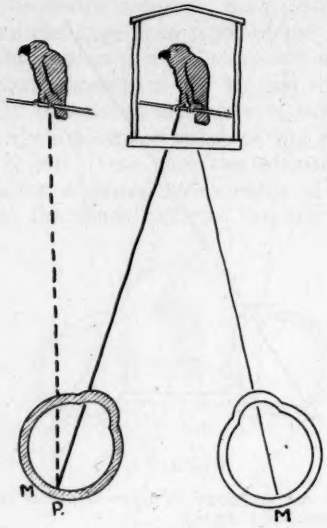

DIAGRAM 4—CASE OF CONVERGENT SQUINT.

Monocular diplopia obtained by stimulation of the acquired corresponding point.

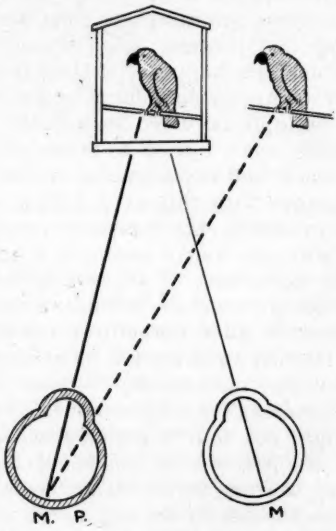

DIAGRAM 5—CASE OF CONVERGENT SQUINT.

Monocular diplopia obtained by stimulation of the macula of an eye which has an acquired and congenital correspondence.

managed to teach him to get a normal correspondence and later I was able to obtain monocular diplopia by stimulation of the macula or the abnormal corresponding point. When a macular correspondence was being used and the macula was stimulated the second bird appeared on the right of the cage, *i.e.*, there was in this case a crossed monocular diplopia with the macula. Bielschowsky says that monocular diplopia with the macula is not obtained, but I have obtained it on various occasions, and I think that it probably helps to explain why when his patient fixed eccentrically with the left eye, the left image was dim, but that when he learned to fix with the macula of the left eye, it was his right image which was dim, this image being due to the acquired space value of the macula. Unfortunately, war has prevented me from studying in detail 33 cases of monocular diplopia which I have managed to elicit and therefore this paper is not so complete as I could wish it to be.

Seventy cases of squint with abnormal correspondence were tested for monocular diplopia. It is usually only possible to test for monocular diplopia in those cases where there is a certain degree of intelligence on the part of the patient. Before the age of six, it is rarely possible, but interest on the part of the patient is the most essential factor. Tests have been made, in some cases many times, either by stimulating the eccentric corresponding point or the macula of the squinting eye by fluctuation of the light of the synoptophore. As far as possible, no suggestion of what might occur was made to the patient. The child was simply asked to state what he saw and, if he saw two images with the one eye, he was asked to state, if possible, the position of the images, which image was clearest and what the colours of the second image were like. If the monocular diplopia was seen with an eccentric point on the nasal part of the retina and he was asked to fix either image, the eye would turn out to take up fixation with the macula. If he was asked to fix either image, and the corresponding eccentric point was on the temporal side of the retina, the eye would turn in to take up fixation with the macula. On stimulating the macula, and obtaining monocular diplopia, either no movement was observed or the eye would make a small movement and then return to its original position when the patient was asked to fix either image. In all cases, the image which was not being fixated would disappear.

33 of the 70 cases obtained monocular diplopia.

51·2 per cent. on stimulation of the false corresponding point.

33·3 per cent. on stimulation of both the false corresponding point and the macula.

15·2 per cent. on stimulation of the macula only.

It is interesting to note that of these cases tested with monocular diplopia 78 per cent. were not comitant, and without monocular diplopia 81 per cent. were not comitant, that is to say, they all showed some definite lesion, either paresis or over action of a muscle. At operation, 7·7 per cent. were found to have abnormal muscle insertion.

14·4 per cent. of cases with monocular diplopia were associated with nystagmus.

Type of Binocular Vision	Cases with Monoc.-diplopia	Cases without Monoc.-diplopia
1*a*. False correspondence only 1s or 2nd degree of binocular vision	24·3 per cent.	2·7 per cent.
1*b*. False correspondence with very rudimentary binocular vision	3·0 per cent.	35·2 per cent.
True Correspondence and False Correspondence		
2*a*. Very rudimentary binoc. vision	3·0 per cent.	8·1 per cent.
2*b*. Normal true and rudimentary false	3·0 per cent.	21·6 per cent.
2*c*. True correspondence and false with fusion or 1st degree in both	63·7 per cent.	32·4 per cent.
2*d*. Case with true correspondence and panoramic vision	3·0 per cent.	
Monocular Diplopia Evoked on Stimulation of		
3*a*. Macula only	15·2 per cent.	
3*b*. False corresponding point only	51·5 per cent.	
3*c*. Macula and false corresponding point	33·3 per cent.	
Age of Test in All Cases		
6 years - 9 years	28·6 per cent.	
9 „ - 12 „	40·0 per cent.	
Over 12 years	21·4 per cent.	
Under 6 „	10·0 per cent.	

Total Number of Cases 70	Cases with Monocular Diplopia	Cases without Monocular Diplopia
Total Number of Cases Tested -	33	37
Type of Squint		
Unilateral Convergent - -	75·8 per cent.	67·6 per cent.
Alternating „ - -	12·2 per cent.	27 per cent.
Divergent - - - -	9 per cent.	5·4 per cent.
Vertical - - - - -	3 per cent.	0 per cent.
Not Comitant - - - -	78 per cent.	81 per cent.
Of These: Abnormal Muscle Insertions - -	7·7 per cent.	3 per cent.
Of These: Assoc. with Nystagmus	14·4 per cent.	6 per cent.
Of These: Ocular Torticollis -	34·6 per cent.	16·6 per cent.
Associated with Amblyopia - -	30·3 per cent.	27 per cent.
Age of Commencement of Squint		Age of 2 Cases not known, of the remainder
Birth - 1 year - - - -	42·4 per cent.	11·4 per cent.
1 - 3 years - - - -	45·5 per cent.	40·0 per cent.
3 - 6 „ - - - -	12·1 per cent.	48·6 per cent.

6 per cent. of cases without monocular diplopia were associated with nystagmus.

Ocular torticollis was present in 34·6 per cent. of the cases with monocular diplopia.

Ocular torticollis was present in 16·6 per cent. of the cases without monocular diplopia.

Amblyopia was present in 30·3 per cent. of the cases with monocular diplopia.

Amblyopia was present in 27 per cent. of the cases without monocular diplopia.

Other cases had had an amblyopia which had improved on occlusion. The average age of commencement of the squint was usually younger in those with monocular diplopia as can be seen from the above table.

Cases with a false correspondence only and some degree of binocular vision with this false correspondence usually had a monocular diplopia, but those where the binocular vision was

very rudimentary had no monocular diplopia. Cases with a true and false correspondence, where the true was strong and the false weak, usually had no monocular diplopia. The majority of cases in which monocular diplopia could be evoked were those which had an equal degree of binocular vision when they used the eccentric corresponding point or the macula. In the majority of cases it was more common to evoke monocular diplopia by stimulation of the eccentric point as in this case it was bringing the congenital space value of this point to consciousness. It was less easy to bring monocular diplopia to consciousness by stimulating the macula and usually occurred in those cases where the acquired correspondence was stronger, but it proved the presence of a congenital correspondence. In cases where stimulation of both the maculae or the eccentric point evoked monocular diplopia, the degree of binocular vision was usually equal, whichever correspondence was used. 4·2 per cent. of cases complained of monocular diplopia in everyday life.

Explanation of the Phenomenon

In seeking an explanation of the phenomenon, it is necessary to consider the congenital space value of retinal points as conceived by Hering and the formation of an abnormal retinal correspondence. The macula is the starting point of orientation and each retinal point has a definite orientation in space with regard to the macula. At the same time, each retinal point has a morphological space value corresponding to the space value of a retinal point in the other eye. To a certain extent, we perfect our knowledge of the orientation of objects in space with regard to our own body during the act of binocular vision or in the act of monocular vision, by the combination of the sensations of touch and sight. The normal correspondence of the two maculae can be changed if, by some means during the early years of life, it becomes impossible for the patient to direct both his visual axes towards the object that he wishes to fix. In a large number of cases of squint in children which can be investigated soon after the commencement of the squint, normal correspondence is to be found and also diplopia can be elicited by means of red and green goggles and the double images are situated at a distance from one another corresponding to the angle of the squint. Donders observed that after a time there was an overlapping in the visual fields in some cases of convergent squint without any change, however, in the correspondence of the retinal points; this statement was later repeated by Javal, and von Graefe observed the extension of the binocular field in cases of divergent strabismus. In this stage, the patient has learnt that his eyes are deviating and he also has

learnt by the association of sight and touch the orientation of an object in space with regard to his own body: that is to say, if one meets a squint which fulfils these conditions and it is examined on a synoptophore, if the patient is told to fix with the sound eye, he will orientate correctly with respect to his own body an object seen by the peripheral parts of the retina of the deviated eye, but he still has normal correspondence. At the same time, he is not completely certain of the orientation of this image with respect to the image fixed by the sound eye; for example, if a child is fixing the cage with his sound eye, and the tubes of the synoptophore are placed parallel with the parrot in the tube in front of the deviating eye, he will point correctly to the position of the parrot and will not point as though the eccentric point had the congenital space value; *i.e.*, in a case of convergent squint, he will point in front and not to the temporal side. If, however, he is asked to tell you the relationship of the two images to each other, he will not be able to indicate this exactly, although he is capable of seeing both simultaneously. If he is tested with red and green goggles, the two images are usually seen fairly close together, but he is uncertain of the exact distance between them, and the distance may vary. There is now a conflict between his sense of touch which is teaching him that one and not two images are present and his congenital system of the orientation of images perceived by dissimilar points. If he forms a false correspondence and ignores the congenital correspondence, the images of the dissimilar points will appear to be at the same place in space but if he uses both the true and the false correspondences, then he will orientate at times correctly with respect to his body and at others incorrectly according to whether he uses the acquired or the congenital correspondence. In this condition, where both a false and a true correspondence are present, each retinal point must possess two space values, *i.e.*, a congenital and an acquired, and one retinal point can orientate itself in two entirely different positions in space with no movement of the eyes having taken place. Most cases that squint from birth or within the first few months of life, who have any appreciable angle of squint, usually only possess an acquired correspondence by the time they are old enough to have their binocular vision tested and these cases are the worst to treat, as from the very earliest years they have used their eyes in an abnormal manner; and the associational fibres which are used during the early years of life are the most fixed; but even in some of these cases it is possible to evoke a monocular diplopia by stimulating the eccentric corresponding point. If we stimulate the eccentric point corresponding to the macula of the other eye, we can make the patient conscious of the congenital and acquired space value of this point simultaneously and this causes monocular

diplopia. We can now see how stimulation of a point on the nasal part of the retina, which is using an acquired space value, results in an uncrossed diplopia because it brings to consciousness the congenital space value of this point and the second image is naturally on the temporal side of the first. Naturally, stimulation of the macula when the congenital space value is being used, results in the second image being seen on the nasal side of the first image, *i.e.*, there is a crossed diplopia due to the evoking of the acquired space value. There are certain exceptions to this condition, as, for example, where a squint has had a false correspondence which has now moved nearer to the macula. In this case, stimulation of the newly acquired corresponding point will result in a crossed and not an uncrossed diplopia. The converse of the position of images, both on stimulation of the macula or of the eccentric point, holds for the case of a divergent squint.

Some Observations Associated with the Second Image in Monocular Diplopia

1. Generally in the beginning it is much dimmer than the first image.

2. Its colours are less well defined.

3. In the beginning, it is very vague and disappears easily.

4. It is difficult for the patient to orientate its position in space.

5. On prolonged stimulation, one or other image will disappear but if the congenital space value is the stronger, this image will remain.

6. On asking the patient to fix either image caused by the stimulation of the eccentric point corresponding to the macula of the other eye, the eye will turn to take up fixation with the macula and the non-fixated image will disappear,

7. On telling the child to fix either image excited by stimulation of the macula, there will be no movement of the eye or there will be a slight flicker and the eye later returns to its original position and the non-fixated image will disappear.

Conclusions

This condition of monocular diplopia is caused by bringing to consciousness simultaneously the congenital and the acquired space value of a retina. At the same time, it gives one a link between the contrary theories of the nativists, the empiricists and the projection theory of Nagel. The fact that monocular diplopia

can be stimulated in cases which have suffered from squint since birth and have only been able to use an acquired space value, proves the existence of some degree of congenital space value of retinal points. In cases where it is very difficult to obtain macular correspondence, stimulation of the abnormal corresponding point may cause the phenomenon of monocular diplopia to take place, thus evoking a true space value of the retinal point. Prolonged stimulation will cause the image due to the acquired space value to disappear and this process may be the first step towards establishing normal retinal correspondence.

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ANNOTATIONS

"Come Sirrah, out with your schedule"—

Ingoldsby Legends

In the past there have been many notable instances of most excellent work having been done in medical matters by men and women in outlying places as well as in the busy haunts of commerce. Jenner's work in the heart of Gloucestershire is an outstanding example; so is that of William Beaumont on the gastric secretion of the Canadian Alexis St. Martin. Francis Adams, of Banchory, spent some of his leisure hours in a Scottish country practice by translating the works of Hippocrates, Paulus Aegineta and Aretæus; while coming to comparatively recent times we have the pioneer work of Sir James Mackenzie at Blackburn. We think that there must be much in our own speciality which is observed by both town and country practitioners which is not recorded; partly we suppose because the doctor is too busy to write up his observations at the end of a long day's work, and perhaps also from a feeling of diffidence and not knowing very well whether his observations are worth sending in to the editors of such a journal as ours. If the latter be the case we may say that we shall be only too glad to publish papers in reason if they are sent to us. We sometimes hear suggestions that the journal contains too much of the results of research work and too little of clinical case records. We assure all whom it may concern that short papers of clinical interest are always welcome.

Many years ago we read in a now defunct periodical an interesting paper of observations which were recorded by an old doctor in country practice. It was his custom to jot down on the counterfoils of his death certificate book the chief facts of each particular case; and he certainly managed to record a good number of out of the way conditions. We do not mean to hint that the ophthalmic surgeon deals largely with death certificates; he doesn't: but it is usually pretty easy to jot down in a note book the chief clinical facts, and to write them up afterwards.

When the writer was a student one of his teachers was never tired of insisting on the fact that the surgery of general practice does not consist in tying the subclavian artery and removing ovarian cysts.

In the same way, the writing of an article for this journal need not mean an elaborate series of statistics, references, biochemical observations and the like. Should the author feel disposed to write just a straightforward account of his clinical experiences and the methods he has used, his contribution will be very welcome.

The Supply of Spectacles

We regret that the notice by the Association of Dispensing Opticians Ltd., which was printed in our advertisement columns last month reached us too late to enable us to comment thereon in the November issue. It is obvious that at the present time some delay in supplying spectacles must arise and the reasons for this are set out in the pages in question and need not be recapitulated here. Ophthalmic surgeons may rest assured that the optical trade will do all in their power to minimize this delay and surgeons will, it is hoped, explain to their patients that the goods cannot be delivered with that speed which was so noticeable before the war. After all the delay is part of a world upheaval and must be endured patiently.

It is worth while pointing out that surgeons can help in this matter by refraining from ordering glasses which have to be made specially, in cases where such glasses are not essential. For instance, a presbyope without signs of eye strain can do with an ordinary presbyopic correction even if an eighth of a dioptre of astigmatism be present. The total resources of the country in the provision of spectacle lenses are much less than the number required, and the manufacture of out of the way lenses only adds to the difficulties and delays.

ABSTRACTS

MISCELLANEOUS

(1) **Maxwell, J. S. (Fairmont, West Virginia).—Modification of the Hotz operation for entropion due to trachoma.** *Amer. Jl. Ophthal.*, Vol. XXIV. p. 298, 1941.

(1) **Maxwell** describes the technique he favours for the Hotz operation for entropion due to trachoma. He suggests that the trachoma virus is in the tarsus and that the conjunctiva suffers recurrent inflammation from this source. He believes that post-operative fibrosis in the tarsal plate checks the egress of the virus.

The author stresses the importance of adequate preliminary treatment to clear up active conjunctival inflammation. He uses applications of silver nitrate 1 and 2 per cent. for this purpose. It is important to pay attention to thorough surgical work at the extremities of the elliptical incision which should pass 2 mm. beyond the line of cilia at the inner and outer canthus. An ellipse of skin and a band of orbicularis muscle 4-5 mm. wide are excised and the tarsal plate pared down from near its upper margin to an

incision 3 mm. above the lid margin which nearly traverses its entire thickness. Three mattress sutures are inserted from near the upper margin of the tarsus to the lid margin where they are tied the ends left long and carried upwards to be secured to the frontal region by strapping. Sutures are removed on the seventh day.

H. B. STALLARD.

(2) **Verhage, J. W. C. (Leyden).—Miners' nystagmus and disturbances in adaptation. (Bergmannsnystagmus und Adaptationsstorungen).** *Ophthalmologica*, Vol. XCIX, p. 503, 1940. .

(2) After a short discussion of the more important theories on miners' nystagmus, **Verhage** points out that working incapacity does not run parallel to the degree of nystagmus. A thorough examination of eight patients led to the finding that all eight men had a disturbance of adaptation, thus confirming the results obtained by Ohm and Weekers. Twenty-five patients suffering from miners' nystagmus were examined for the purpose of determining exactly the degree of adaptation (uniform light adaptation, mydriasis, correction of the difference in the size of the pupils, etc.). For control purposes the adaptation of 91 miners, on sick leave owing to their nystagmus, and 47 normal miners was determined without the above-mentioned precautions. Adaptation was seen to be normal in the case of the normal miners, disturbed in well over 70 per cent. of the patients with nystagmus.

The author holds that an important, if not the greater part of the subjective troubles of the patients are caused not by the nystagmus but by the disturbance of adaptation. The cause of the disturbance of the adaptation, he considers to lie in strong contrasts which exist in the mines between source of light and the field of work.

ARNOLD SORSBY.

(3) **van Waveren, W. F. J. (der Helder, Holland).—Amotio retinae attending scleritis and its possible relations with Harada's disease.** *Ophthalmologica*, Vol. XCIX, p. 543, 1940.

(3) **van Waveren** describes a case of retinal detachment in the left eye seen in the course of recurrent bilateral scleritis in a woman aged 41 years. He discusses the condition in relation to somewhat similar clinical pictures described by different writers. Thus Harada has drawn attention to the characteristic picture of diffuse choroiditis and retinal detachment. Tagami and others showed its inflammatory character. Several authors stress a possible relationship between Harada's disease and the disease of Kovanagi and sympathetic ophthalmitis.

Retinal detachment in cases of scleritis is not frequent. Horay and Lund, therefore, assumed a relationship between such cases and Harada's disease.

It is possible that there is a connection between the cases of scleritis with retinal detachment and Harada's disease in so far as the scleritis may be part of the full Harada syndrome.

The author emphasises the high sedimentation rate in his case and the prompt recovery on salicylate treatment.

ARNOLD SORSBY.

(4) **Keiner, G. B. J. (Zwolle, Holland).—Cholesterin deposits in the eye. (Ueber Cholesterinablagerungen im Auge).** *Ophthalmologica*, Vol. XCIX, p. 459, 1940.

(4) **Keiner** describes clinically and histologically three cases of deposits of cholesterin in the eye. After discussing the formation of fat and lipoids there follows a review of the three lipoid diseases: Niemann-Pick disease, Gaucher's disease and the Schüller-Christian-Hand syndrome. The author suggests that ocular cholesterinosis may possibly be a symptom of the latter affection. The ways in which crystals are formed in primary and secondary fatty changes are discussed. Attention is called to the important rôle of the reticulo-endothelial system in the formation of deposits of cholesterin in the globe.

ARNOLD SORSBY.

(5) **Halbertsma, K. T. A. (Delft).—The presence of histamine in the human aqueous.** *Ophthalmologica*, Vol. XCIX, p. 443, 1940.

(5) **Halbertsma** obtained aqueous by operation from patients with and without glaucoma. This was added to Läwen-Trendelenburg perfusion fluid. The first group showed a definite vaso-constrictory effect, which was lacking in the second group. This was demonstrated on guinea-pig bowel by Tyrode perfusion. The contraction of the capillary vessels was typical for histamine and histamine-like substances. The concentration lay between 1 : 10·6 and 1 : 10·7. These experiments confirm Frederick Ridley's work showing the presence of a histamine-like substance in the aqueous of the glaucomatous eye. Glaucoma may be due to the influence of histamine on the intra-ocular capillaries.

ARNOLD SORSBY.

(6) **Deutman, A. F. (Leyden).—Formolized cornea and keratoplasty in rabbit's eyes.** *Ophthalmologica*, Vol. XCIX, p. 418, 1941.

(6) **Duetman** reports on partial penetrating homokeratoplasty performed on five normal rabbits' eyes. Pieces of normal rabbit's cornea that had been fixed in 4 per cent. formaldehyde for one day

and then washed in running tap-water for 48 hours, were used as transplant material. To avoid the advantages and disadvantages of one single method of operation, two essentially different techniques were applied. In all cases the formolized transplant took with less tissue reaction than transplants of normal cornea from freshly enucleated rabbit eyes. All the transplants clinically observed during 3, 5 (3 cases) or 11 months after operation, remained opaque. On stereoscopic photographs these opacities were seen localised in the posterior layers of the corneal parenchyma. Histologically these opacities were seen to result from a connective tissue membrane that had developed behind the formolized graft, which appeared surrounded by the neighbouring corneal tissues as if there was an attempt at encapsulation. The result of these experiments suggests that keratoplasty material which has been formolized for a short time is more fit for tectonic purposes than for optical improvement.

ARNOLD SORSBY.

(7) **Guyton, J. S. and Woods, A. C. (Baltimore).—Advances in the use of sulfanilimade compounds in ophthalmology.** *Amer. Jl. Ophthal.*, Vol. XXIV, p. 428, 1941.

(7) **Guyton and Woods** comment on the necessity for full therapeutic doses of sulphanilamides in order that they may be effective in certain ocular disorders. The blood concentration should be sulphanilamide 6 to 11 mg. per cent.; sulpha-pyridine slightly less than this; and sulphathiazde 3 to 9 mg. per cent.

For gonococcal conjunctivitis sulphapyridine has been used but recent trials show that sulphathiazde is better. This disorder is cured in 1 to 4 days but it is important to continue the treatment for 3 days after a negative smear. It seems that sulphanilamide has a direct effect on the trachoma virus according to the authors. Fourteen cases of inclusive blenorrhoea cleared up promptly with sulphanilamide. Koch-Weeks bacillus infection of the conjunctiva was rapidly cured by the same drug. Sulphanilamide is less nauseating when combined with an equal quantity of sodium bicarbonate.

Sulphathiazde was not entirely satisfactory in the treatment of staphylococcal infections. In pneumococcal lesions of the conjunctiva and cornea it operated equally well as sulphapyridine. It proved to be best in the treatment of B. coli infections and dysentery. Meningococcal infections did better with sulphapyridine than sulphanilamide.

An appendix of doses according to body weight is given at the end of this paper.

H. B. STALLARD.

(8) **Pinars, M. H. (Brooklyn, New York).—Monocular diplopia.** *Amer. Jl. Ophthal.*, Vol. XXIV, p. 503, 1941.

(8) **Pinars** describes a case of monocular diplopia occurring in the only eye of a coloured male, aged 50 years. The other eye had been lost from injury. The peculiar feature of the case was that the images became more widely separated as the object receded. There was no detectable intra-ocular disorder likely to cause the diplopia, neither was there any evidence of hysteria nor grounds for suspecting malingering. The condition was still present and unchanged four years after the onset. The author was unable to give any explanation to account for the monocular diplopia.

H. B. STALLARD.

(9) **Barbour, A. and Fralich, F. B. (Ann Arbor, Michigan).—The posterior approach for removal of magnetic intra-ocular foreign bodies.** *Amer. Jl. Ophthal.*, Vol. XXIV, p. 553, 1941.

(9) **Barbour and Fralich** comment on the risk of damage to the lens by extracting some foreign bodies through the anterior route. The site of the foreign body is carefully localised by radiography. The sclera is trephined by a 1·5 or 2 mm. trephine at a point 4·5 to 5 mm. from the corneo-scleral junction and over the pars plana of the ciliary body at the nearest accessible point to the foreign body. Part of the trephined disc of sclera is allowed to remain hinged. Before the trephine has penetrated the sclera a suture is passed through the sclera at a point just posterior and then just anterior to the trephine cut, the loop of the suture is drawn aside and the trephine cut completed, the pars plana of the ciliary body is incised antero-posteriorly parallel with the long axis of the veins. The giant magnet is applied to the trephine hole and the foreign body is withdrawn. The trephine disc is replaced and secured by the suture, the ends of which are then brought out through the overlying conjunctival flap and tied.

The authors have performed 14 operations according to this technique and in none has sympathetic ophthalmitis occurred.

H. B. STALLARD.

(10) **Ballantyne, A. J. (Glasgow).—The reflexes of the fundus oculi.** *Proc. Roy. Soc. Med. Section of Ophthal.*, November, 1940.

(10) **Ballantyne's** Presidential address before the Section of Ophthalmology of the Royal Society of Medicine occupies 24 pages of the proceedings, and contains 26 illustrations. His work on the fundus has been known for years as always of a very high standard.

" The fundus reflexes reveal, in a manner not yet completely understood, the texture and contour of the reflecting surfaces and

the condition of the underlying tissues. In this way they may play an important part in the microscopy of the eye."

He emphasises the importance of comparing the appearances seen with the long and short wave lights such as those of the sodium and mercury lamps, in addition to the usual ophthalmoscopic lights in the investigation and interpretation of these reflexes. Reflexes are of course both physiological and pathological and may be linear or annular in type. " Punctate reflexes, other than Gunn's dots, are pathological." " It is characteristic of the pathological reflexes that they come and go, and change their character according to the progress of the pathological condition. The linear reflexes in particular may change from one form to another, and may be finally transformed into surface reflexes of physiological character."

The author has done a service to ophthalmology by this address which is helpful in many ways and shows the importance of a subject to which too little attention has been devoted in the past.

R.R.J.

(11) **Shimkin, N. I. (Haifa).—The treatment of trachoma with sulphanilamide.** *Medicina*, December, 1940.

(11) **Shimkin** reports, in the Hebrew journal *Medicina*, 32 cases of severe trachoma complicated with pannus and ulceration treated with sulphanilamide. Photophobia and blepharospasm cleared up by the third day of treatment at latest. For adults one gram of sulphanilamide was given thrice daily after meals, 0·5 gram for children thrice daily. Pannus cleared up in 10 to 14 days' time. Up to November 1940 more than 200 severe trachoma cases were treated with good results. In the year 1940 six cases of gonorrhoeal conjunctivitis (the brand in adults) were treated with dagenan. After four days' treatment no gonococci could be found in the smears.

The paper is in Hebrew but a convenient summary in English is appended.

R.R.J.

(12) **Gordon, White and Hassard (Toronto).—Retinopathy in diabetics.** *Canadian Med. Assoc. Jl.*, June, 1941.

(12) This is a paper read at the Seventy-First Annual Meeting of the Canadian Medical Association, Section of Ophthalmology, Toronto, on June 20, 1940.

Gordon, White and Hassard here report on one hundred cases from the diabetic clinic at the Toronto Western Hospital. The intention is to make " a routine eye examination of all diabetic clinic patients, which will give a cross-section of the occurrence of retinopathy in these patients."

Their conclusions are as follows: " In this series of 100 diabetic patients the incidence of retinopathy increases with advancing age, and duration and severity of diabetes, and the association of cardio-vascular-renal disease. However, there are six cases of retinopathy in the series without cardio-vascular disease, and the main factor in this group appears to be the severity and control of the diabetes. This factor, however, cannot be responsible for all the cases of retinopathy. The only factor, so far discovered, common to all these cases is the diabetes itself, and until some other factor is discovered diabetic retinopathy must be considered a clinical entity, in which the vessel walls of the diabetic are affected by some factor other than and in addition to those operating in cardiac disease, hypertension and nephritis."

R.R.J.

(13) **Buxton, R. (Weston-super-Mare).—Bomb splinters in the eye.** *Med. Press and Circ.*, July 2, 1941.

(13) **Buxton** contributes a short practical paper on bomb injuries of the eye which will be of value to those engaged in first-aid practice who are called on to examine such cases in the first instance. Severe injuries, of course, must go to the nearest ophthalmic surgeon and it is better to wait a few hours than to risk losing the eye by ill-advised surgery. He deals with first-aid treatment for minor injuries and gives clear rules for the examination of the injured eye, relates two cases and details the correct treatment under the headings of lids, burns, conjunctiva, cornea, wounds, iris and sclera. His final remarks are on the routine preparation of the patient for intra-ocular operation. His second case was that of a lady whose left eye had been severely injured by glass splinters, whose cornea was ruptured with iris prolapse. The right eye had not been reported on, and was found to have a penetrating wound with iris and vitreous prolapse and retinal detachment. Buxton covered the wound in the left eye with a complete conjunctival flap secured by purse-string suture. In the right eye the prolapsed iris and vitreous were excised. With such a serious injury to the right eye it would not have been correct to remove the left eye at once. Sympathetic ophthalmia nearly always gives one about a fortnight's grace before declaring itself. As it happened the left eye did not improve and was removed on the tenth day.

R.R.J.

(14) **Lloyd Morgan, A. (Toronto).—Plastic repair of deformities of the eyelids.** *Canadian Med. Assoc. Jl.*, June, 1941.

(14) **Lloyd Morgan** gives brief descriptions of three cases with illustrations to show the method adopted. Case I was cicatricial

ectropion of the lower lid in a boy aged 12 years. The second case was of congenital ptosis with epicanthus and very narrow palpebral fissure in a female child of 4 years of age; the third was a female child, 4 years of age, born without a left upper lid. We reprint here the author's discussion :—

" Plastic repair of deformities about the eyes will not always restore the condition to normal, and the results are sometimes discouraging both to the doctor and the patient. The best that can be hoped for is to improve the appearance, and to achieve that end this type of plastic surgery requires special consideration. Care must be taken not to make new scars which will prove more unsightly than the original ones. If possible, incisions should run in the same direction as the fibres of the orbicularis muscle.

Cicatricial ectropion of the lower lid, as in Case I, is usually the result of accidents in which there has been a loss of tissue with contracting scars and traction downward of the lower lid. The lid margin is often intact. In the area bounded by the orbit the skin is of a different texture and pigmentation from that of other parts of the face; therefore, grafts from other parts of the body, as behind the ear or under the arm, show a contrasting colour. Hence, the best source of skin is from the upper lid of either the same or the opposite eye. There is plenty of loose skin in this situation, and grafts 40 mm. long and 20 mm. wide can be obtained. The grafts should contain nothing but skin. These full thickness grafts take well. Pedicle grafts are usually unnecessary. All bleeding on the surface to be grafted must be stopped before applying the grafts, as any haemorrhage under the grafts prevents proper adhesion. Before applying the pressure dressing, the best material to use directly over the graft is a thin layer of perforated cellophane, lightly smeared with vaseline. This method was first described by Wheeler in 1920, and gives excellent results.

Lid adhesions perform a very important duty; they protect the cornea, and prevent post-operative contraction of the graft. They should be used to prevent corneal ulceration in any type of operation which requires a pressure dressing. It is usually unnecessary to have more than two, one on each side of the pupil. The adhesions stretch slightly and the patient is able to see through the slightly open fissure.

Grafts forming a new lid must be lined with mucous membrane to prevent contraction. Conjunctiva is better than buccal mucous membrane as it forms a smoother surface. There are several ways to repair ptosis of the lids, all based on three main types: (*a*) Suspension of the tarsus from the frontalis muscle; (*b*) shortening of the levator palpebrarum; (*c*) use of the superior rectus.

Type (*a*) should be used when there is a unilateral paralysis of

the levator or narrow palpebral fissures. Type (*b*) can be used only when there is some action of the levator. Type (*c*), when there is bilateral ptosis due to levator paralysis but no mechanical restriction of movement of the upper lid.

Fascia lata is an excellent material to use in suspending the upper margins of the tarsus to the frontalis muscle. It does not stretch nor undergo absorption. Wright modified his original methods so that the technique is much simpler."

R. R. J.

(15) **Kirwan, Lieut.-Col. E. O'G. (Calcutta).—The enumeration of the blind in India.** *Indian Med. Gaz.*, March, 1941.

(15) **Kirwan's** short paper with the above title was read at the Eighth Conference of the All-India Ophthalmological Societ at Bangalore in December, 1940. The first blind relief association in India was started in the Bombay Presidency in 1913, by the late Mr. C. C. Henderson, I.C.S. A survey of the blind in some districts by this association found that the actual number of blind persons was far higher than that indicated by the census returns.

The prevention of Blindness Society of Bengal has carried on this pioneer work and during the period of 4½ years has surveyed 379 villages of different districts in that Presidency. The large figure of 670 completely blind persons out of a total population of 340,240 has been found. This gives 196.91 blind persons per 100,000 in contrast to the figure of 73 per 100,000 in the census for 1931. " It is probably correctly written that there are about one and a half million blind persons in India, and for every one person blind there are three partially blind, out of a total population of 353,000,000, whereas the census figures of 1931 show a little over three-fifths of a million blind persons." These figures speak for themselves.

R. R. J.

BOOK NOTICES

The Medical Annual, 1941. Bristol: John Wright and Sons, Limited. Price, 23/-.

Editors, contributors and especially the publishers are to be congratulated on the appearance of the 59th volume of this important work. Enemy action interfered grossly with the appearance but could do no more than postpone it. The scope of the work is of course well known to our readers; as in past years Sir Stewart Duke-Elder is responsible for the ophthalmic section. He supplies short articles on glaucoma, iritis, trachoma, and uveitis with

complications. Under the first named he deals with new methods of miotic treatment. Under trachoma he discusses the rôle of sulphanilamide in the treatment and helps to correct extravagant ideas. The question of iontophoresis with a 1-200 to 1-100 solution of quinine bisulphate in the treatment of trachoma is also discussed. W. L. Cooper, in the *Arch. of Ophthal.* (1940) has claimed good results from this treatment, especially when the cornea is involved, and has found it particularly useful in such cases as relapse after sulphanilamide treatment.

The plates, 39 in number and some of them in colour, have been well chosen and admirably reproduced; and the whole volume is a very good 23 shillings' worth.

Ophthalmic Nursing. By MAURICE H. WHITING, O.B.E., Pp. 157, Figs. 54. J. and A. Churchill, Limited. 1941.

That this book is now in its third edition is a tribute to its suitability for the purpose for which it was written. Although the author states in his preface that only a small space has been devoted to anatomy, he manages by a strict economy of words to convey as much useful information as many others do in far more pages. The same is true of the sections dealing with diseases and injuries of the eye.

The remainder of the book is concerned with problems bearing more immediately on nursing and there are chapters dealing with therapeutics, methods of treatment, operations, and nursing of surgical and non-surgical cases. These embody the practices adopted at Moorfields, and as these are the result of more than a century of experience, their value needs no emphasis.

The principal changes in the new edition as compared with the old are that it includes references to the use of sulphanamide, and contains a short section on the treatment of gas burns of the eye.

CORRESPONDENCE

HYPEREMESIS GRAVIDARUM

To the Editors of THE BRITISH JOURNAL OF OPHTHALMOLOGY.

DEAR SIRS—Following the annotation in the September number of the Journal, I read with exceptional interest Professor Ballantyne's article in the Journal of Obstetrics and Gynaecology of the British Empire on the ocular complications in hyperemesis gravidarum. In the annotation you suggest that it would be of interest to obtain

information as to the occurrence of ocular complications in hyperemesis gravidarum from other obstetrical institutions.

The Rotunda Hospital has during the last six years been responsible for 28,830 deliveries but I have not been called upon to investigate a single case of hyperemesis gravidarum. It is very probable that as Professor Ballantyne suggests, a slight loss of vision passes unnoticed in the presence of severe vomiting, but as it has been my routine to carry out an ophthalmoscopic examination on every patient complaining of loss of vision, I think the condition must be rare. As further evidence of the rarity of the condition, the present Master of the Rotunda Hospital—Dr. Ninian Falkiner—tells me that in 15 years obstetrical practice he has never encountered a loss of vision in association with this condition.

Yours faithfully,

L. B. SOMERVILLE-LARGE.

17, FITZWILLIAM PLACE,
DUBLIN
October, 22, 1941.

CACOETHES SCRIBENDI

To the Editors of THE BRITISH JOURNAL OF OPHTHALMOLOGY.

DEAR SIRS,—Sir Stewart Duke-Elder has crushed your annotation which appeared on pages 496 and 497. This is a pity, for the article was evidently written in lighter vein than most of your contributions. Through its very severity the letter from Sir Stewart may in some produce a smile, and indeed the subject recalls certain articles which have appeared recently in your contemporary "Punch" over the initials "A.P.H."

One is glad to hear, however, that the Army has gone one better than Moorfields and that the soldier now departs after his examination wearing his new spectacles.

Whilst the medical department of the War Office is to be congratulated on this change, it is not a change *de novo*, for a similar arrangement was in force in France in 1916 to 1918 with the B.E.F. and due credit should be allowed to Sir William Lister and those in authority over the ophthalmic services of the Army at that period.

I am, etc.,

FRANK JULER,
Colonel L/R.A.M.C.

96, HARLEY STREET, W.1
November 10, 1941.

THE TABETIC PUPIL

To the Editors of THE BRITISH JOURNAL OF OPHTHALMOLOGY.

DEAR SIRS,—A few days ago I re-read a paper written by me and printed in the March (1941) number of your journal—the paper is entitled the Tabetic Pupil.

I was disappointed to discover that it contains a gross neurological error. Although this mistake does not affect the discussion, or the conclusions arrived at, yet in my opinion it does detract from the merit of the paper as a whole.

I would therefore be obliged if you would publish this letter of explanation. When dealing with the proprioceptive impulses from the ocular muscles during accommodation I placed them as travelling in the motor ocular nerve.

This of course is incorrect—they pass in the ophthalmic division of V and reach the motor oculi nucleus via its mesencephalic root. I do not know whether this function has been attributed to this root or not—but to suggest such a function to some extent clears the mist of obscurity which surrounds the somewhat nebulous description of its function given by some text books.

Yours faithfully,

PERCIVAL W. LEATHART.

2, HOWBECK ROAD, BIRKENHEAD.
November 7, 1941

THE DEMANDS OF THE SERVICES

To the Editors of THE BRITISH JOURNAL OF OPHTHALMOLOGY.

DEAR SIRS,—The demand for ophthalmic "specialists" in the services is one of considerable urgency and is certain to increase. It is greatest in the army not only because of the latter's impressive size, but also because, even since the recent revision in standards of vision, it has undergone and is still in process of undergoing a revolutionary development towards mechanisation. The old army standard was based on the minimum visual requirements of the infantryman and, although there are now seven standards of visual acuity, some at least of these still represent little or no advance on the old standard. Every soldier should be able to spot an aeroplane at the earliest possible moment, yet Standard V, in which the corrected vision of each eye is only 6/24, if in fact it does refer to

soldiers, for there is no indication as to which branch of the services each standard applies, seems to me to fall short of this requirement.

Everyone who has done any stalking or big game hunting has experienced the fatigue of scouring the country throughout long periods with field-glasses, yet the gun-layer in the artillery spends the whole time during a shoot looking through his telescope, possibly for 20 minutes or so without a break. Various instruments of precision, such as directors, range-finders, and telescopic sights, to say nothing of sound location, radiolocation, signals, searchlights, and in addition the intricate mechanism of modern guns and internal combustion engines, make great demands on the visual acuity of the soldier, and readily induce ocular fatigue. The degree markings on scales are often very fine and need very close scrutiny. Map reading in the dark by the light of an electric torch is an experience most of us have endured in the blackout. Finally, all these operations may have to be undertaken while wearing a gas-mask.

It seems fair to conclude that in the modern army repeated refraction work and re-grading of the men are constantly necessary. To add to the difficulty, there is some reluctance on the part of regular medical officers to specialize in ophthalmology. There is too much routine refraction examinations and relatively too little of the more interesting surgical and clinical work. Thus, the ophthalmic surgeon's time, energy and services are deflected from his proper sphere of ministering to the needs of the civil community, and relegated to a type of work in which his special skill and experience are largely superfluous.

I venture to propose the following solution. We have throughout the country a large number of men who have had some training in elementary optics and in the general principles of correcting errors of refraction—the sight-testing opticians. Out of this pool suitable men could be recruited to work under the direction of a surgeon, after undergoing a preliminary course specially designed for them. They would constitute, in effect, yet another ancillary profession. A team, comprising one surgeon and a group of ancillary opticians, could get through a large amount of work, the latter, under supervision, plotting fields, doing dark adaptation tests, estimating muscle balance and refractions, and perhaps undertaking orthoptic training. I suggest that the opticians should have Warrant Officer rank, with the prospect of promotion to commissioned rank as Second Lieutenants, R.A.M.C.

The problem of the sight-testing optician is one of many that, through neglect, have become almost insoluble, which we have inherited as a result of the perverse indifference of our predecessors. The present position is most unsatisfactory and there is general agreement that statutory recognition of the *de facto* status of opticians, which is the political aim of the latter, would simply make

a bad position worse, while to drift on as we are doing is itself a confession of surrender, and can but lead to the eventual victory of the other side. It may be argued that my proposal does in fact give statutory recognition. That the future will decide. In the meantime the course I suggest does neutralize the worst consequences of official recognition in that the optician works, not independently, but under the supervision of an ophthalmic surgeon; it does meet an urgent war need; and it may create later an entirely new situation in terms of which the lines of future policy may more clearly be discerned. I realise that there are difficulties, which I do not propose to discuss at this stage, but I feel also that, as a war-time experiment on an adequate scale, such a proceeding is clearly justifiable.

Yours very truly,

A. RUGG-GUNN.

18, HARLEY STREET, W.1
November 13, 1941.

OBITUARY

DR. JAMES KERR

DR. JAMES KERR, whose recent departure from this life of ours is recorded on October 5, was not an ophthalmic surgeon. But there has been no member of our profession in the past fifty years who did more for the preservation and assistance of the eyesight of our fellow countrymen than did Dr. James Kerr.

His record is brilliant indeed. He was born in Glasgow. From there he went to Manchester Grammar School. Thence he went to St. John's College, Cambridge, with a science scholarship. He justified that scholarship, for he got first class honours in the Natural Science Tripos. Then he went to St. Bartholomew's Hospital in London as a senior science scholar. He gained all his degrees, and the D.P.H. at Cambridge.

He started practice in Bradford, and soon got on the staff of some of the hospitals there. One of these was the Bradford Eye and Ear Hospital. In that city he became linked with school work, and was made medical superintendent of the Bradford School Board. He did a fine piece of work in organising a school medical service. That brought him to London, where he was the first medical officer of the old time London School Board; which ultimately was absorbed into the London County Council. In that

office he started the greatest school medical service that has ever been known.

It was in that London school work of his that I first came into contact with him. He called a number of us young eye men who were working as clinical assistants at Moorfields and other hospitals, to help him in an investigation of the vision of the London school children. Each of us was allotted an area of schools. We were to give three half-days a week to the work. I remember well his instructions. Go to your schools, he said, examine the children's eyes for surface diseases. Test their visual acuity with a test card. Record your findings so that they can be made use of in a general record of the state of the eyes of the children. And, further, he said, if your experience of this primitive work suggests to your minds some allied investigation, go ahead with that enquiry, and count the doing of it as part of your service.

That early work, based on Dr. Kerr's idea, was immensely fruitful, as every school medical officer knows, and as many ophthalmic surgeons know. Throughout the many years of my association with him as one of his part-time staff, there was no one whose attitude I found more encouraging. There was no one more willing to try out new ideas, or to help one in experimental work. I cannot give a better impression of this good mind of his than tell of the part he played in the origin of the now well-known Myope Classes or Sight Saving Classes. In 1902 he put me in charge of the London blind schools. Examination of these children showed that many of them were high myopes and not blind. I told him what I found. At a meeting of the Second International Congress of School Hygiene held in London in 1907, of which he was a secretary, he suggested I should give an account of what I had seen in these blind schools. By great good fortune the chairman of the Section was a member of the L.C.C. Education Committee, Miss Adler. She and Dr. Kerr gave full backing to the first experimental myope class. Without his backing there would have been none of them.

He had a keenly scientific mind and judgment; as was well shown by his work with the Society of Illuminating Engineers. In 1924 American engineers and architects produced a good work: "The Code of Lighting School Buildings." This was commented upon and extended in a masterly paper by Dr. Kerr at the meeting of the London Illuminating Engineering Society in London, 1926. He dealt with natural lighting. This paper of his became a real standard of reference. His book on "School Vision and the Myopic Scholar," and his great work "The Fundamentals of School Health," were notable pieces of work.

As a man Dr. Kerr was kindly and pleasant. He had the true sympathetic mind of a medical practitioner. He was a great and good colleague. His memory will live.

N. BISHOP HARMAN.

NOTES

BRITISH JOURNAL OF OPHTHALMOLOGY

Increase in Subscription Rates in 1942

WE regret to have to inform subscribers that it has been found necessary to increase the price of the Journal from January 1, 1942, to £3 3 0 per annum, or 7/6 per number.

As will be easily understood, this increase has been necessitated by the rise in the cost of every single item of expenditure, paper, printing and distribution, in some instances up to double the pre-war cost.

The management will make every effort to keep the Journal up to its present high standard both in quality and quantity, and hopes it may rely on its subscribers to provide the necessary funds to make this possible.

* * * *

Notes on May & Baker's Medical Specialities

THE fourth edition of May & Baker's Medical Specialities (1940) includes a great deal that will be of interest to the medical profession. Since the last issue several new products, and foremost among them the Dagenan-M & B 693, have been given to the world. As the authors say, the discovery of this drug is the most important advance in chemotherapy of recent years. The composition, method of supply, dosage and cost are here set out under each drug and there is a comprehensive appendix of therapeutic indications.

* * * *

Special Notice

WE are asked by the Ministry of Information to state that the fact that goods made of raw materials in short supply owing to war conditions are advertised in this journal should not be taken as an indication that they are necessarily available for export.

We understand that there is a possibility that the continuance of certain kinds of advertising might give to the American public a false impression that Great Britain is seeking to avoid the obligations of the Lend-Lease Agreement. Exports of the classes of goods falling within this undertaking are controlled under the export licensing system and this fact robs the impression of any real foundation.

We gladly give prominence to this notice.